

isms. This result leads to inferences regarding alternate energy pathways in the system. We believe that a large portion of primary production is transferred to the fishery food web directly as detritus particles, rather than being cycled through bacterial populations.

**Aspects of Digestion and Role of the Green Turtle, *Chelonia mydas*, in the Detrital Cycle of Seagrass Meadows**

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Samples were taken at seven sections along the complete digestive tract of two green turtles captured in the vicinity of the Miskito Cays, Nicaragua. Material was analyzed for pH, dry weight, organic matter, acid and neutral detergent fiber, lignin, caloric content, and carbon, nitrogen and amino compound levels. The food bolus was composed exclusively of the seagrass *Thalassia testudinum*. The apparent digestibility coefficients for carbon, organic matter and energy for the two turtles ranged from 64 to 75% while for nitrogen it ranged from 25 to 45%. There was an almost three-fold increase in essential amino acid concentration per gram of material present between the esophagus and rectum. Based on fecal production rates, digestibility coefficients, and nutrient levels in the food source and rectum, we have computed consumption rates for these green turtles which indicate that an immature green turtle (50–80 kg) can consume about 0.5 m<sup>2</sup> of *Thalassia* blades daily. Nitrogen equivalent to approximately 60% of that in the food source is defecated in the form of fecal matter rich in nitrogen compounds and presumably microbes. Thus, the green turtle not only absorbs nutrients from its seagrass food source but produces a detritus rich in nitrogen, thereby effectively short-circuiting the time period for normal seagrass decomposition and subsequent microbial enrichment.

*Presented in Poster Session*

**Effect of Copper on Spat Settlement of the Oyster, *Crassostrea virginica***

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The copper contents of aufwuchs material was compared from successful and unsuccessful spat-fall areas of the Chesapeake Bay. Based on these results, artificially copper-contaminated aufwuchs material was prepared and used for laboratory observations of oyster pediveliger settling behavior and field setting experiments.

**Estuarine Sediment Transport and Holocene Depositional History, Upper Chesapeake Bay, Maryland**

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In the upper Chesapeake Bay a variety of sedimentologic and geochemical indicators reveal that significant changes have occurred in both sediment input rates and sediment sources during the time since the river-to-estuary transition. Acoustic profiling of the basement rocks enables calculation of the total volume of sediment deposited in the estuary since filling began about 6,800 years ago. Radiocarbon dating provides a record of sedimentation rates and sea level rise over the past 2,000 years. Digitization of a series of four historic bathymetric charts gives information on rates of filling and shoreline erosion since 1845. Lead-210 activity profiles in cores provide sedimentation rates over the past century. A core profile of cesium-137 gives the rate of sedimentation since the fallout maximum in 1963. Clay mineralogy and adsorbed reactor nuclides indicate present-day sediment sources. In all of these methods for quantifying sediment input, an accelerating pace of filling can be seen, from a mid-Holocene rate of about 0.5 mm per yr to the present value of about 5 mm per yr.

**Patterns of Heavy Metal Distribution in Several Compartments of a Freshwater Tidal Wetland**

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Seasonal patterns of heavy metal distribution were investigated in a Delaware River Estuary freshwater tidal wetland. Standing stocks of Cd and Zn in the aboveground vegetation showed little seasonal change ranging from  $0.6 \pm 0.1$  to  $0.9 \pm 0.2$  mg per m<sup>2</sup> for Cd and  $58.3 \pm 10.1$  to  $63.4 \pm 18.8$  mg per m<sup>2</sup> for Zn. Standing stocks of Cu, Pb, and Ni increased during the growing season with Cu peaking in July at  $7.2 \pm 0.9$  mg per m<sup>2</sup> and Pb and Ni peaking in September with levels of  $20.1 \pm 5.2$  and  $7.1 \pm 1.9$  mg per m<sup>2</sup> respectively. Allocation studies showed that tissue concentrations followed the pattern roots > leaves > stems with reproductive structures exceeding leaves and stems when present. Litter standing stocks in November were significantly higher ( $p \geq .01$ ) than September vegetation. Soil levels, however, varied little during the May–November period. Thus, both the vegetation and litter play important, though temporary, roles in the retention of heavy metals in freshwater tidal wetlands.

**210-Lead Geochemistry in Chesapeake Bay: The Representative Sampling Problem**

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For deposition rate measurements, 17 cores were selected, based on x-ray evidence of minimal biotur-